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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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08/988,686 12/11/97 KONECNI

A TI-22166

MM42/1123

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EXAMINER

EATON, K

ART UNIT

PAPER NUMBER

2823

10

DATE MAILED:

11/23/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/988,686

Applicant(s)

KONECNI ET AL.

Examiner

Kurt M Eaton

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 1999.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-25 is/are pending in the application.
- 4a) Of the above claim(s) 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
 2. ☐ received in Application No. (Series Code / Serial Number) _____.
 3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☐ Notice of References Cited (PTO-892)
- 15) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 17) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: _____

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DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: lines of text in the disclosure as originally filed are spaced too closely together; and holes are punched in the top of the disclosure as originally filed. See 37 CFR 1.52(b).

2. The substitute specification filed 9/3/99 has not been entered because it does not conform to 37 CFR 1.125(b) because: the substitute specification lacks a marked up copy showing the matter being added to and the matter being deleted from the specification of record; and the substitute specification filed under 37 CFR 1.125(b) must be accompanied by a statement indicating that no new matter was included – there is no obligation on the examiner to make a detailed comparison between the old and new specifications for determining whether or not new matter has been added.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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5. Claim 21 recites the limitation "said conductive structure having an opening with sidewalls and a bottom and exposes a portion of said first conductive structure" in lines 5-7 of claim 21.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-15 have been canceled.

8. Newly added claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata.

Applicants cited Nakata shows in Figures 4 and 5A-5F a method of fabricating an electronic device having a first conductive structure (33) situated over a semiconductor substrate (31), the method including the steps of: forming a first conductive structure (33); forming an insulating layer (34) over the first conductive structure, wherein the insulating layer has an opening with sidewalls (35) and a bottom and exposes a portion of the first conductive structure; providing, at a first position (11) within a chamber, ions of an inert gas of either argon or helium into the opening in the insulating layer wherein the ions of inert gas remove unwanted material formed in the opening in the insulating layer; providing, at a second position (21) within the chamber, a gas comprised of hydrogen incorporated within a plasma into the opening in the insulating layer wherein the hydrogen incorporated within the plasma removes unwanted material formed in the opening in the insulating layer; and depositing a conductive material (36) including aluminum, copper, or titanium into the

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opening using CVD { column 4, line 19 – column 7, line 59; column 9, lines 24-40; column 10, lines 19-44}.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to expose the semiconductor substrate of Nakata to the hydrogen within the plasma and the inert gas ions in the same chamber at the same time as opposed to exposing the semiconductor substrate to the hydrogen ions and the inert gas ions in separate chambers at separate times since accomplishing in one step what was accomplished in many steps would have been an obvious process optimization choice that would have involved routine skill in the art.

Response to Arguments

9. Applicant's arguments filed 9/1/99 have been fully considered but they are not persuasive.

In re applicants assertion that, according to page five of the originally filed instant application, the method of the instant invention specifically does not use the halogen gases of Nakata because of the associated problems with them, the examiner respectfully submits that there is simply no support for applicants aforementioned assertion. In fact, applicant states at page 5, lines 16-17 that "ions of hydrogen, argon, nitrogen, or suitable gases that form the cleaning plasma" may be used in the instantly claimed invention. All of the gases in Nakata contribute towards cleaning the portion of the first conductive structure exposed by the opening in the insulating layer therefore all of the gases within the cleaning plasma of Nakata are, according to applicants criterion of suitable gases that may form the cleaning plasma, are "suitable".

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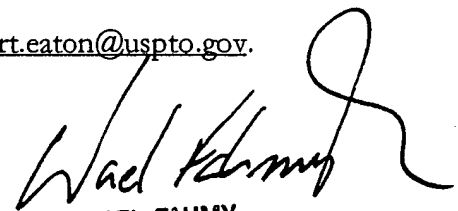
Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

11. Paper related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication of earlier communication from the examiner should be directed to **Kurt Eaton** at **(703) 305-0383** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via kurt.eaton@uspto.gov.


Wael Fahmy
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800